Improving Air Force Enterprise Logistics Management Tools

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Introduction

The fielding of the Integrated Logistics Support-Supply (ILS-S) Enterprise Solution-Supply (ES-S) capabilities over the past several years provided Air Force logistics managers with numerous capabilities for more effectively managing the Air Force supply chain. The fielding of those capability improvements also prompted ES-S users to suggest ways the application could be enhanced to yield additional process improvements. In fact, the 754th Electronic Systems Group (ELSG/ILSS) has accumulated a list of over 100 documented suggestions for enhancing ES-S functionality. Those improvement ideas, coupled with the recently identified needs for the improved tracking of Air Force nuclear weapons related material (NWRM) assets, prompted the development of additional functionality and enhanced features via the ILS-S ES-S component. The Air Staff and the major commands (MAJCOM) worked together to prioritize and obtain approval and funding to enable the development, testing, and implementation of the most beneficial of the suggested enhancements.[1] The remainder of this article describes the key ES-S enhancements that will be fielded in the coming months via ILS-S (ES-S) Version 3.1 and Version 3.2.

Overview of ILS-S (ES-S) Version 3.1 Enhancements

Several of the MAJCOM- and Air Force Global Logistics Support Center (GLSC)-recommended enhancements will be implemented via ILS-S (ES-S) Version 3.1 and fielded for worldwide use in August 2009. The Version 3.1 enhancements can be generally grouped into five general categories. Those categories are as follows:

- Shipment Tracking and Management. Version 3.1 provides capabilities to better track base-level inbound and outbound shipments, including serialized tracking, shipment destination record management, and supply discrepancy reporting.
- Data Management Capabilities. ILS-S (ES-S) Version 3.1 provides three new data management features. First, it enforces a higher degree of system and data access to address security and proprietary data issues. Second, the application query capabilities have been expanded to enable users to query authoritative interchangeable and substitute group (I&SG) data. Finally, modifications were made to improve the performance of the application's audit trail query feature to ensure users continue to have access to historical data without any negative impact on software performance.

Article Acronyms

AFDS – Air Force Data Services
AFMC – Air Force Materiel Command
AIT – Automated Information Technology
AWP – Awaiting Parts
CICP – Contractor Inventory Control Point
CMOS – Cargo Movement Operations System
CRF – Centralized Repair Facility
DAAS – Defense Automatic Addressing System
DLA – Defense Logistics Agency
DLMS – Defense Logistics Management Standard
DoD – Department of Defense
DoDAAC – Department of Defense Activity Address Code
ELSG/ILSS – 754th Electronic Systems Group
EXPRESS – Execution and Prioritization of Repair Support System
FSL – Forward Supply Location
GLSC – Global Logistics Support Center
I&SG – Interchangeable and Substitute Group
ILS-S – Integrated Logistics Support—Supply
IS – Information System
JCS – Joint Chiefs of Staff
MAJCOM – Major Command
MICAP – Mission Capable
MILS – Military Standard
NWRM – Nuclear Weapons Related Material
RDO – Redistribution Order
SATS – Supply Asset Tracking System
SBSS – Standard Base Supply System
SDR – Supply Discrepancy Report

- Physical Asset Management. The new version provides users the ability to manage warehouse validations, inventory counts, centralized repair facility (CRF) reparable asset inductions, and to print bin labels via ES-S rather than via the legacy capability in the Standard Base Supply System (SBSS).
- Excess Equipment Redistribution. Version 3.1 implements a new capability to efficiently identify and redistribute excess equipment consistent with competing enterprise equipment priorities.
- Order Management Capabilities. Two new order management capabilities are provided in Version 3.1. First, a new exception requisition processing (A0E/5) capability enables managers to electronically capture and transmit part-numbered requisitions. Second, the new version implements a capability to process redistribution orders (RDO) directly through ES–S to more effectively determine and communicate shipment or denial action.

ILS-S (ES-S) Version 3.1 New Capabilities

In August 2009, we fielded Version 3.1 of ES-S. The following paragraphs provide high-level summaries of the new capabilities enabled via the release.

- Shipment Tracking and Management.
  - Inbound Shipment Tracking. The inbound shipment tracking capability automates the current manual SBSS tracer action required process. ES–S programmatically identifies (up to 2 weeks earlier) late inbound, serviceable shipments based upon existing delivery time standards and manages those shipments by creating and updating internal late inbound shipment records. For each late inbound serviceable shipment identified, ES-S logic initiates queries of the Global Transportation Network (GTN) system for updated shipment status and, when applicable, generates shipment status transactions to update the ILS-S SBSS component. Additionally, ES-S generates specific late inbound shipment reports that prompt the user to select appropriate actions to resolve late inbound shipments.
  - Outbound Shipment Tracking. The ES-S manage outbound shipment component was initially fielded in August 2008. The component provides the capability to manage ES-S base outbound shipment records for SBSS accounts. This capability consists of two parts as illustrated in Figure 1. The first part focuses on ensuring base supply outbound shipments are planned and executed within expected time frames by transportation management office personnel. The second part provides managers with shipment receipt information to confirm and ensure timely delivery to the shipment destination. Two new features were added in Version 3.1. First, the application directly interfaces with the GTN system. This interface enables automated, rule-based, and manually launched queries to provide managers with current shipment information or status for any (not just ILS-S-initiated) base outbound shipment with a transportation control number. Additionally with this release, the ES-S outbound shipment records are programmatically appended with serial number data for any SBSS shipment of a serially tracked asset. This will enable managers to know at all times where shipments of serially controlled items are located.
- Shipping Destination Record Management. Version 3.1 implements a new capability that allows ES-S users to view and manage all of the shipment destination records stored in the SBSS. An SBSS shipment destination record is the source of data for obtaining the delivery address for ship to locations associated with specific Department of Defense activity address codes (DoDAAC). This new capability eliminates the need for SBSS users to schedule and process the Shipping Destination Record Cleanup program. This improvement also significantly simplifies the process for updating the shipping destination data by eliminating the need to access legacy SBSS data input screens and consolidating previous multiple ES-S data input screens. Further, ES-S logic programmatically converts user screen inputs to generate and process the SBSS legacy transactions (as applicable) to update SBSS shipping destination data.
- Supply Discrepancy Reporting. ES-S Version 3.1, Manage Supply Discrepancy Report (SDR) capability automates the SDR submission process to the Department of Defense (DoD) Web SDR system. Additionally, this new capability allows users to manually submit and manage SDRs to the DoD Web SDR application. Figure 2 illustrates the new SDR functionality.

  The ES-S SDR application programmatically identifies discrepant receipt transactions, regardless of the controlled item identification code or dollar value, processed within the SBSS and creates an SDR record for each discrepant receipt. Users may also manually create an SDR record within ES-S for discrepant receipts that are not detected via the system's embedded business rules. The application compiles a list of these SDR records and presents them to the user. The user can select individual SDR records to accomplish the following actions:
  - Review the ES-S SDR records
  - Update the SDR records prior to submission
  - Delete SDR records altogether

  Once the user submits an SDR, the ES-S component will send the record to the DoD Web SDR application for subsequent routing to the appropriate shipper. The ES-S SDR application will also receive and process responses from the DoD Web SDR system and update the applicable ES-S SDR record. Additionally, the ES-S SDR application will automatically perform initial follow-up actions and will allow users to select SDR records that require manual or MAJCOM follow-up. As an added benefit, accessing the DoD Web SDR via ES-S negates the need for enterprise managers to obtain a user identification for the Web SDR system.
- Data Management Capabilities.
  - Increased Access Restrictions. Version 3.1 access restrictions capability implements a higher degree of control over system and data access to address rising security and proprietary data concerns. The new restrictions primarily affect contractor inventory control points (CICP), Nonstandard (for example, United Kingdom) accounts, and read-only users. However, with the implementation of Version 3.1, all users are initially restricted from accessing ES-S until they have an established account and their user type has been identified

in their user profile. This reverses the previous practice of automatically granting any user with an ES-S or logistics portal role automatic read-only access. Additionally, system administration capabilities were modified in Version 3.1 and new user attributes were created to support the new restrictions. Further modifications were made to systematically enforce a three-tier administration concept and limit administration within assigned administrative groups. Effective with Version 3.1 implementation, each ES-S user will be assigned to one of four USER TYPE codes: DoD military or civilian, support contractor, CICP, or nonstandard user. Based on the USER TYPE, system access and restrictions are applied.

When Version 3.1 is implemented, DoD military or civilian users must agree to the information system (IS) agreement when signing on to the ES-S component. In addition to an IS agreement, support contractor users must accept a nondisclosure agreement for proprietary data. In addition to accepting the agreements, CICP users will be restricted from accessing other CICP source of supply data, but will be able to view other DoD and government sources of data (for example, air logistics centers, Defense Logistics Agency [DLA], General Services Administration, and other Services). Certain other capabilities are not allowed and are unavailable via the menus, so that only stock number and transaction history queries are allowed. In addition to accepting the agreements, nonstandard users are restricted exclusively to data and processing against their DoDAAC, and no enterprise capabilities are enabled (for example, query asset, query order, auto sourcing). Nonstandard user processing capabilities and transactions are limited to accomplishing only tasks associated with the

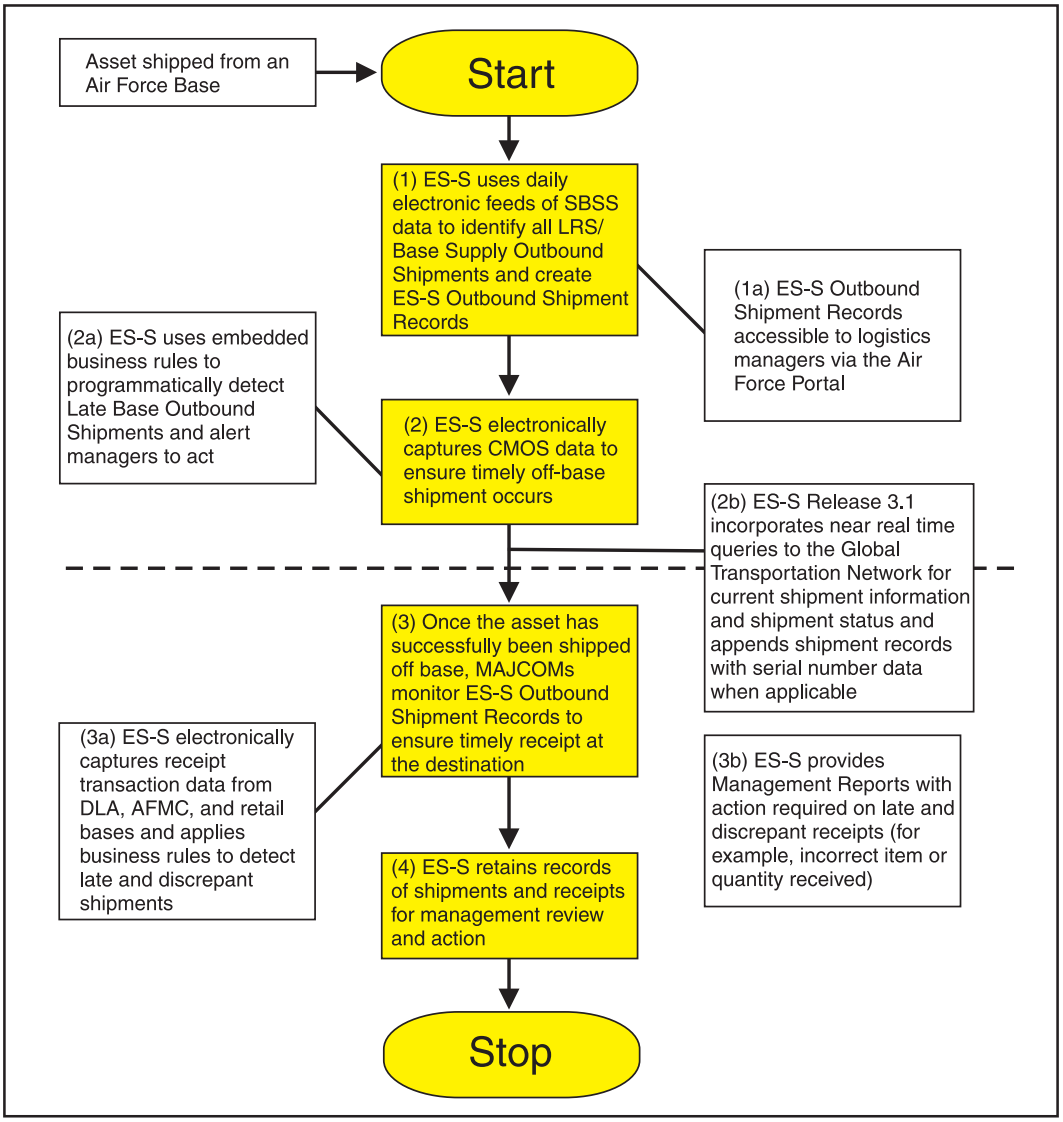

Figure 1. ES-S Version 3.1 Outbound Shipment Tracking Capability

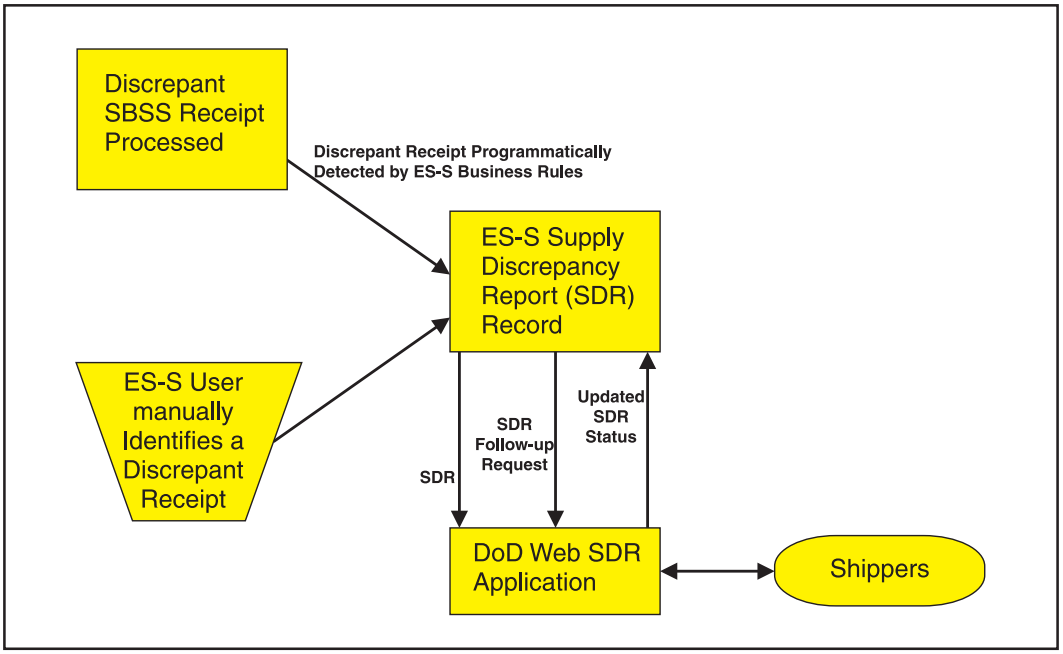

Figure 2. ES-S Version 3.1 Supply Discrepancy Report Process Flow

receipt, issue, stock, and store operations. Nonstandard users do not have access to ES-S requisition or shipment capabilities, nor can they send or receive data through ES-S-enabled external system interfaces.

- I&SG Query. The ES-S Version 3.1 release provides users a new query capability (in addition to the existing asset, audit trail, order, and serial number query capabilities) to view I&SG data. ES-S receives I&SG data from Air Force Data Services (AFDS) (data originated from the AFMC [D043] catalog data system). The user is able to query by a specific stock number, subgroup stock number, or master stock number, and view the applicable I&SG data as reflected in D043.
- AFDS Audit Trail Query. Another new data management capability is included in Version 3.1 that is transparent to the user, but worth noting. ES-S will programmatically offload to AFDS on a daily basis, audit trail records that are over 180 days old. This allows the removal of large numbers of records from ES-S data storage, thus precluding *data overload* that could potentially slow ES-S response times. Records less than 180 days old will continue to be maintained in ES-S. Whenever a user processes an audit trail query with a date range exceeding 180 days, audit record results for the entire queried date range will be displayed. However, behind the scenes, ES-S will simultaneously extract records less than 180 days old from ES-S and records over 180 days old from AFDS, merge the data, and present all the results to the user in a single integrated view. This is done in near real time and users will notice no change from the current process.

- Physical Asset Management. The new ES-S version provides users additional physical asset management capabilities. In Version 3.1, users will be able to manage warehouse validations, manage inventory counts, and print bin labels via ES-S.
  - Warehouse Location and Validation Management. The warehouse location and validation management capability provided in Version 3.1 allows users to validate SBSS warehouse location records when ILS-S data indicates a *dead* (unused) warehouse location, serviceable materiel is received and no warehouse location exists for the item, suspect warehouse locations exist and a warehouse location validation is required. Additionally, the 3.1 update provides a single user input screen for updating and deleting warehouse locations. Providing these features via Version 3.1 eliminates the need for SBSS users to schedule and process the current SBSS Warehouse Location Validation program.
  - Inventory Count Capability. The current base-level inventory count process requires each person conducting an inventory to have a logon identification to the SBSS. Further, unless individuals complete an entire inventory count in a single session, they must log into the SBSS again and again until the inventory count and any required recounts are completed. Version 3.1 inventory management capability is designed to replace the need for a persistent connection to the SBSS. In fact, when using the inventory count capability users do not need to log directly onto the SBSS at all. Rather, after identifying the segment of warehouse locations that needs to be counted, the entire inventory count data entry process can be conducted within ES-S. This new inventory count capability allows users to print the products required to conduct the inventory count, enter and process the counts and recounts, determine inventory counts requiring additional research, enter comments, process inventory adjustments, and obtain an inventory completion notice. The new capability reduces the administrative overhead associated with obtaining and maintaining SBSS system connection software passwords, and it enables base-level personnel greater flexibility in completing and recording inventory count data. Once the inventory count is completed via the new ES-S capability, the counts are programmatically entered into the SBSS to update base supply system inventory records. Unfortunately, this new capability does not yet interact with the hand held terminals used by the Supply Asset Tracking System (SATS) and the upcoming asset management capability. The requirement to enable this automated information technology (AIT) interaction is still unfunded.
  - Manage CRF Reparable Asset Inductions. In an earlier ES-S release, we fielded a capability that enabled ES-S to interface with the Execution and Prioritization of Repair Support System (EXPRESS) to obtain and implement optimal reparable asset induction quantities by national stock number. In ES-S Version 3.1, we further enhanced that capability by using the daily EXPRESS induction quantities, which are often for quantities greater than one, to format and programmatically process singular SBSS legacy transactions that implement the total EXPRESS-recommended quantities. This improvement eases user workload by programmatically implementing the EXPRESS induction quantities in a way that conforms to Air Force requirements for tracking individual repair actions via unique due in from maintenance detail records.
  - Label Printing. Base supply warehouse locations are marked with bin labels showing what property, in what condition is stored in each location. Under current processes, replacement bin labels for serviceable items can only be generated by inputting a transaction into the SBSS and waiting for the label to be printed during end-of-day processing. Further, the current process does not provide the capability to produce bin labels for unserviceable items. Those bin labels must be hand written. ES-S Version 3.1 includes the capability to generate and print bin labels, complete with bar codes, for serviceable and unserviceable storage locations. An example of an ES-S-produced bin label is shown in Figure 3. The ES-S-produced bin labels are written in a portable document file format that can be sent to any printer loaded with bin label sheets.
- Excess Equipment Redistribution. Version 3.1 implements important new enterprise-based equipment management capabilities. As illustrated in Figure 4, the excess equipment redistribution capability programmatically matches excess equipment assets to unfilled existing requirements and facilitates the user's ability to redistribute the asset based on enterprise priority needs. The ES-S receives requisition and requirements data from the Air Force Equipment Management System—Equipment Requirements System, and asset and other data from AFDS. The ES-S application then applies business rules to the data to determine whether and where to redistribute the excess equipment based upon all competing needs for the item across the Air Force. The application then calculates and presents the user with a view of recommended matches of excess assets to unfilled requisitions. The

application also provides the user with the option to accept or modify the recommended match. Once the user confirms his redistribution decision, the ES-S application does a final check of available assets and needs, then executes legacy data system redistribution transactions to initiate the asset shipment.

- Order Management Capabilities. ES-S Version 3.1 provides three new order management capabilities: an exception requisition processing capability, expanded auto sourcing capabilities that detect and source upgraded requisitions and high-priority requisitions from forward supply locations (FSL), and the capability to process RDOs directly through ES-S.

  - Part Number Exception Requisition Management (A0E/A05). The manage part number (exception) requisitions capability allows users to electronically submit part-numbered requisitions and the associated item descriptive data to DLA. Where the current process for submitting part-numbered item requisitions to DLA is a manual, message-based process, the new ES-S Version 3.1 capability enables users to electronically generate and transmit the exception requisitions. The new process electronically intercepts SBSS (A0E/A05) requisition transactions that result from the current customer issue request process and writes the requisition transactions to a file. The users then select the exception requisitions they want to manage and enter the descriptive data required to complete the requisition. Once the user enters the descriptive data, ES-S submits both the military standard (MILS) transaction and descriptive data to DLA in near real time (via the Defense Automatic Addressing System [DAAS]) in a single transaction.

    This capability improvement was made possible via a new modernized Defense Logistics Management Standard (DLMS) format that accommodates exception requisition data, including the item descriptive data. The DLA Enterprise Business System is DLMS enabled and can readily receive and interpret the DLMS requisition transaction. It is important to note that the 754th ELSG's initial experience in transforming legacy ILS-S transactions into DLMS formatted transactions was funded via DLA's *Jump Start* initiative. The knowledge gained via that initial experience enabled us to develop this innovative capability, which can be easily expanded to send part-numbered orders to additional source of supply systems as they become DLMS enabled.

  - Order Redistribution. The new RDO capability implemented via ES-S Version 3.1 is designed to intercept RDOs (A2A/1) that normally flow from Air Force inventory control points through DAAS to SBSS accounts. Within Version 3.1, the incoming RDO transactions are processed through ES-S and either acknowledged or denied based on ES-S automatic sourcing asset release rules. The automatic sourcing logic within ES-S considers the priority of the RDO with respect to the need for the available asset at its current location and either directs shipment or denial appropriately. Since the incoming RDO is processed through ES-S, an audit entry will be recorded in the ES-S audit trail. The capability also includes several reports to assist with the management of problems associated with RDOs. For example, users can create a list of all RDO suspense details from any SBSS account, list any rejects associated with RDOs, determine if RDO rejects were cleared but not reprocessed, and determine if an RDO shipment was reverse posted.

Overview of ILS-S (ES-S) Version 3.2 Capability Enhancements

The ES-S Version 3.1 functional improvements will be quickly followed by further capability enhancements via ES-S Version 3.2. Version 3.2, which will be fielded for worldwide use in

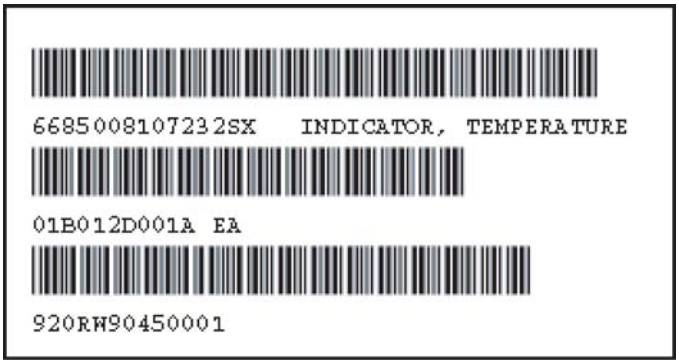

Figure 3. Example of an ES-S-Produced Warehouse Bin Label

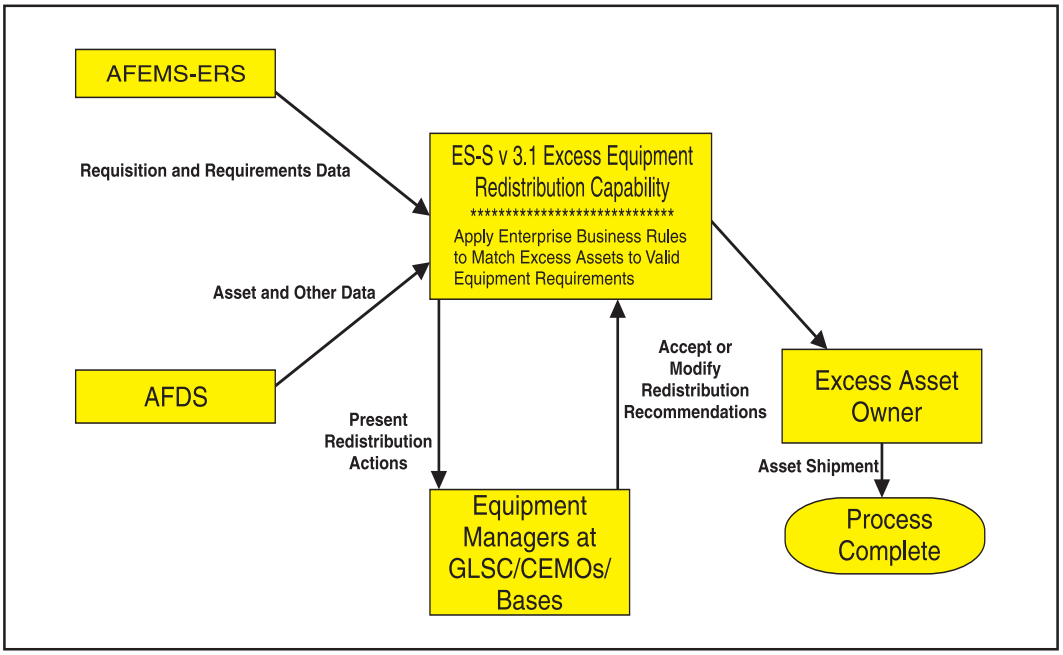

Figure 4. ES-S Version 3.1 Enterprise Equipment Redistribution Capability Process Flow

October 2009, consists of three general functional capabilities. The first involves an extension of the ES-S automatic sourcing feature to accommodate FSL requirements. The second new capability will exploit modern electronic messaging capabilities to improve the speed and content of data communication between the SBSS and the DoD Cargo Movement Operations System (CMOS). The third functional improvement that will be delivered via Version 3.2 is a modernized capability for using AIT to manage base material warehousing processes.

ILS-S (ES-S) Version 3.2 New Capabilities

Version 3.2 capabilities will enable automatic sourcing of FSL requirements sourcing capabilities, and improve the quality and accessibility of data used to view and manage the enterprise movements of shipped and warehoused assets.

- Auto Sourcing for Upgraded Requisitions and Priority FSL Needs. A previous version (3.0) of ES-S includes an automatic sourcing capability designed to systematically determine the best source for the fulfillment of selected high-priority requisitions, and process the appropriate legacy transactions to obtain the assets from lateral sources. However, the ES-S Version 3.0 automatic sourcing feature only reacts to selected high-priority (mission capable [MICAP], Joints Chiefs of Staff (JCS) project coded, and awaiting parts [AWP]) requisition (A0A/A01) transactions. Version 3.1 expands this automatic sourcing capability to also react to requisitions that are upgraded to MICAP, JCS project coded, and AWP priorities after initially requisitioned. The automatic sourcing feature was also updated to handle FSL requisitions and modifications (denoted by project code 196 or 720). The ES-S asset release rules for FSL requisitions and requisition modifications were carefully designed to correctly account for the primary supply point in the sourcing sequence.
- Modernized Base Supply-to-Transportation Electronic Communication. The Air Force requires the capability to maintain positive inventory control for all NWRM as the items move throughout the supply chain. To ensure seamless positive inventory control data is available for tracking NWRM items, SBSS serial number data must be electronically communicated to the CMOS data system in near real time when asset shipments are initiated. Current SBSS-to-CMOS legacy system transactions do not support this requirement. The CMOS data system is currently undergoing update to enable the receipt, transmission, and processing of DLMS transactions. The migration to the new business information standard of the DLMS is an effort to implement modern, commercial transaction sets and eliminate the legacy MILS transactions. Passing data using these modernized DLMS transactions enables the near real time communication of all required SBSS shipment data—plus asset serial numbers—that is currently passed via legacy system transactions. This is not a new start for ES-S development because, of the Jump Start initiative (discussed earlier in this article). Thanks to this initiative, the capability to format and pass DLMS transactions is already resident in the ES-S component of ILS-S.

  The development of this new capability will benefit Air Force logisticians in a number of important ways. First the use of DLMS transactions to communicate asset serial numbers between base supply and base transportation data systems will close a long-standing data air gap and reduce the manpower associated with manually capturing serial number data via handwritten shipment document notes and external tracking tools. In addition to significantly improving serial number tracking processes, the implementation of this requirement will enable enterprise-wide near real time visibility of NWRM and other assets as they move through the supply chain via existing portal-based Logistics Information Management System—Enterprise Visibility Fusion Center capabilities that are already in development. Finally, the successful implementation of this capability will enable the Air Force to DAAS as the sole data communication path between SBSS and CMOS, thus negating the occasional performance problems associated with the current legacy interactive communications interface.

- Modernized Warehouse Management AIT. Warehouse management functions generally consist of those processes involving the receipt, storage, issue, and delivery of materiel to base maintenance personnel and other base organizations. Air Force base supply activities currently use AIT capabilities provided by the ILS-S SATS component to perform these processes. SATS facilitates the collection of data from warehouse processes, the input of SBSS transactions, and the processing of materiel issue forms, notices to stock, and reject or management notices captured from SBSS. SATS AIT capabilities enable legacy input and output transaction processing, the bar coding of assets and warehouse locations, and the use of portable label printers and HHTs with built-in bar code reader and radio frequency data collection features. However, when the Air Force-mandated implementation of the Vista operating system occurs in December 2009, the ILS-S SATS component will no longer function. Therefore, the functionality that currently exists in SATS will be completely replaced and enhanced via the ES-S Version 3.2 release. In addition to providing all the features of SATS, Version 3.2 will store transaction in a centralized database that can be viewed in near real time by enterprise logistics managers. That enterprise transaction data visibility will significantly improve Air Force supply chain management capabilities.

Summary and Conclusion

The ES-S component of ILS-S has provided Air Force logistics managers an effective IT platform for developing and implementing Web-based, enterprise logistics management capabilities. The initial deliveries of ES-S capabilities have successfully fielded vital functionality enabling the Air Force GLSC to centrally view and manage supply chain resources. The additional capabilities being delivered via ES-S Version 3.1 and Version 3.2 (in October 2009) will further improve the Air Force's ability to effectively and cohesively manage limited logistics resources, and assist in further refining the evolving Air Force logistics functional requirements for future implementation via the Expeditionary Combat Support System.

Notes

1. The remaining functional improvement suggestions are under Air Staff review and consideration for implementation via future ILS-S (ES-S) updates.

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